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SCIENCE

FRIDAY, JULY 4, 1913

A PLEA FOR CLOSER INTERRELATIONS
IN OUR WORK¹

CONTENTS

<i>A Plea for Closer Interrelations in Our Work</i> : PROFESSOR L. R. JONES	1
<i>Report of the International Commission on Zoological Nomenclature</i> : DR. C. W. STILES	6
<i>Appropriations for the University of Illinois</i>	19
<i>Scientific Notes and News</i>	20
<i>University and Educational News</i>	23
<i>Discussion and Correspondence:—</i>	
<i>Some Facts concerning Mendelism</i> : PROFESSOR T. H. MCHATTON. <i>The Food of Plants</i> : DR. N. CONSER. <i>A Good Soil Tube</i> : DR. CHARLES F. SHAW. <i>Lee's "Introduction to Botany"</i> : PROFESSOR W. F. GANONG. <i>The Leonhard Euler Society</i> : PROFESSOR ARNOLD EMCH	24
<i>Scientific Books:—</i>	
<i>Johnson's Fixité de la Côte Atlantique de l'Amérique du Nord</i> : DR. JOHN M. CLARKE. <i>Mathematik f. Biologen und Chemiker</i> : PROFESSOR H. L. RIETZ. <i>Rutherford on Radioactive Substances</i> : PROFESSOR R. A. MILLIKAN	26
<i>Scientific Journals and Articles</i>	30
<i>Special Articles:—</i>	
<i>Accessory Chromosomes in the Pig</i> : DR. J. E. WODSEDALEK. <i>The Effect of External Stimuli upon the Cell</i> : DR. C. F. HOTTES ..	30
<i>Section G of the American Association and Botanists of the Central States</i> : PROFESSOR HENRY C. COWLES	32

MSS. intended for publication and books, etc., intended for review should be sent to Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

It is the plan of our secretary to depart from the usual symposium idea this afternoon. Instead of selecting a single topic upon the various aspects of which in turn our attention is to be focused, he has asked to have addresses on different topics, evidently with the idea that we may be led to realize more fully the diversity of interests now encompassed in Section G.

This at once suggests the problem which has been formulating more clearly each year in the field where my own chief interests lie, that of plant pathology. Most of the work in this field, at least so far as it presents the problem, is of two easily definable types, which, while in some ways widely different, nevertheless, have much in common. These are, first, the training of graduate students for professional work as phytopathologists, second, the direction of research work supported by public funds, either state or national. Outside of these two fields, we have only the limited activities represented, on the one hand, by undergraduate teaching, and, on the other hand, by research privately supported. I

¹ The paper as above published is a combination of two symposium papers read by the author at the recent Cleveland meetings, as follows: (1) "A Plea for Closer Interrelations in our Work." Read at the Botanical Symposium, Section G, December 31, 1912. (2) "Some International Aspects of Phytopathological Problems." Read at the Symposium of the American Phytopathological Society, January 2, 1913. The other papers read at this Symposium are being published in *Phytopathology*. In order to make the theme continuous, the second paper has been abridged and modified somewhat, but without essential change of idea.

5. The connection between the Beta and the Gamma rays, the recent investigation of which has raised new and interesting questions regarding the nature of electro-magnetic radiation itself.

6. The elaborate study of the thorium and actinium series of products, a study which has been chiefly responsible for the extension of the twenty radioactive products known in 1905, to the thirty-two known in 1913.

7. The new evidence for and against the activity of ordinary matter.

8. The bearing of radioactivity upon the age of the earth.

The author's style is always direct and simple and the present book, like its predecessor, can be read by those not trained in severe mathematical analysis. At the same time, the work of compiling has been carefully and thoroughly done, the references to the original articles are complete, and the author has been remarkably successful in dealing fully and fairly with the work of other investigators and in making a thorough and complete presentation of the facts and theories of radioactivity as they stand in the year 1913. This book will undoubtedly be the standard work on radioactivity for the next five or six years at least.

R. A. MILLIKAN

UNIVERSITY OF CHICAGO,
RYERSON PHYSICAL LABORATORY,
June 2, 1913

SCIENTIFIC JOURNALS AND ARTICLES

THE April number (volume 14, No. 2) of the *Transactions of the American Mathematical Society* contains the following papers:

J. L. Coolidge: "A study of the circle cross."

W. W. Denton: "Projective differential geometry of developable surfaces."

K. P. Williams: "The solutions of non-homogeneous linear difference equations and their asymptotic form."

A. B. Coble: "An application of finite geometry to the characteristic theory of the odd and even theta functions."

W. F. Osgood and E. H. Taylor: "Conformal transformations on the boundaries of their regions of definition."

THE May number (volume 19, number 8)

of the *Bulletin of the American Mathematical Society* contains: Report of the February meeting of the Society, by F. N. Cole; "Three or more rational curves collinearly related," by J. E. Rowe; "Second note on Fermat's last theorem," by R. D. Carmichael; "An extension of a theorem of Painlevé," by E. H. Taylor; "Mathematical physics and integral equations," by W. A. Hurwitz; "Shorter Notices": Schulze's Teaching of Mathematics in Secondary Schools, by J. L. Coolidge; Hime's Anharmonic Coordinates, by J. V. McKelvey; Beutel's Algebraische Kurven, Zweiter Teil, by H. S. White; Scheffer's Lehrbuch der Mathematik für Studierende der Naturwissenschaften und der Technik, by A. R. Crathorne; Sainte-Laguë's Notions de Mathématiques, by R. C. Archibald; Weber and Wellstein's Encyklopädie der Elementar-Mathematik, Band III., by J. B. Shaw; Whitaker's History of the Theories of the Æther and Electricity, Krause's Theorie der elliptischen Funktionen and Mill's Introduction to Thermodynamics, by E. B. Wilson; Annuaire du Bureau des Longitudes pour l'An 1913, by E. W. Brown; "Notes"; "New Publications."

The June number of the *Bulletin* contains: Report of the spring meeting of the Chicago Section, by H. E. Slaught; "Concerning two recent theorems on implicit functions," by L. L. Dines; "Concerning the property Δ of a class of functions," by A. D. Pitcher; "The asymptotic form of the function $\Psi(x)$," by K. P. Williams; "An erroneous application of Bayes' theorem to the set of real numbers," by E. L. Dodd; "Shorter Notices": Weber's Partielle Differential-Gleichungen der mathematischen Physik, Band II., and Föppl's Theorie der Elektrizität, Band I., by J. B. Shaw; "Notes"; "New Publications."

SPECIAL ARTICLES

ACCESSORY CHROMOSOMES IN THE PIG

SEVERAL points of interest were brought to light in this study of the spermatogenesis of the pig and the relation of the accessory chromosomes to sex. Unusually good material was available for this investigation and it was found that eighteen chromosomes occur in the